

### **REMARKS**

Claims 2-8, 10-14 and 17-18 remain in the application. Claim 17 was amended for the *sole* purpose of making a grammatical change without changing the substantive scope of the claim. Applicant asserts that no new matter has been added. Reconsideration of the Application is hereby requested

### **Claim Rejections**

#### ***Rejections Under 35 U.S.C. § 103***

Claims 2-5, 10-13, 17 and 18 were rejected under 35 U.S.C. § 103(a), as being obvious over Peir et al., in view of Au.

#### **Rejection as applied to Claims 17 and 18:**

The Office Action indicates that Pier discloses “inhibiting execution of the dependant instruction while the dependant instruction is in the pipeline if the speculative data load is a misprediction,” as recited in Claim 18 (and equivalently recited in Claim 17). However, there is no such disclosure in Pier.

Pier is a system that schedules instructions for loading into an instruction pipeline. [Abstract] As such, it discloses a system that arranges instructions into a Queue for loading into a pipeline. Mispredicted instructions are cancelled prior to their being loaded into the pipeline. The present invention, on the other hand, improves the efficiency of a pipeline into which mispredicted instructions have already been loaded.

While Pier discloses that when a cache entry indicates a hit, dependant instructions are allowed to continue in the pipeline, it also states that “[i]f the entry indicates a miss, the dependent instructions may be cancelled and recovered in the next cycle....” (Pier, ¶[0016]) The fact that the dependent instructions may be recovered in the next cycle indicates that the dependent instructions are not yet in the pipeline. This is because the recovery time for mispredicted instructions in the pipeline would be at least equal to the latency of the pipeline. It would not make sense to have a pipeline with a latency of only one cycle. Therefore, in Pier, for the dependent instructions to be recovered in a single cycle, they must not yet be in the pipeline.

Pier does not disclose a method of increasing efficiency of a pipeline into which mispredicted instructions have already been loaded, but rather a system for scheduling instructions that are about to be loaded into a pipeline. In Pier, “[d]ependent instructions waiting on the load may be scheduled at the cycle after the address generation to avoid any pipeline bubbles.” (Pier, ¶[0015]) Apparently, actions on the dependent instructions are conducted prior to their being loaded into the pipeline. Nothing in Pier indicates that dependent instructions are inhibited *while they are in the pipeline*, as recited in Claims 17 and 18.

The addition of Au does not teach or suggest this limitation, either alone or in combination with Pier.

Because Pier does not teach or suggest the limitation of inhibiting a dependent instruction while it is in the pipeline, Applicant believes that the §103 rejection has been overcome and respectfully requests that it be withdrawn.

### **CONCLUSION**

Applicant believes that the rejections have been overcome for the reasons recited above.

Application No. 10/697,503  
Amendment dated September 19, 2006  
Reply to Office action of 07/19/2006  
Page 7 of 7

Therefore, Applicant respectfully requests that all remaining claims be allowed and that a timely Notice of Allowance be issued.

No addition fees are believed due. However, the Commissioner is hereby authorized to charge any additional fees that may be required, including any necessary extensions of time, which are hereby requested, to Deposit Account No. 503535.

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Date



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